Dhofar 1180

Basalt-bearing anorthositic fragmental breccia

115 g

Figure 1: Dhofar 1180 illustrating dark glassy matrix and light colored feldspathic clasts. Image from M. Farmer. Width of sample is 8 cm.

Introduction

Dhofar 1180 (Fig. 1) was found in the Dhofar region of Oman in January 2005 (Figs. 2 and 3). The meteorite has an external shape similar to a "thick-bladed talon" (Connolly et al., in preparation). The sample is a feldspathic fragmental breccia that contains a variety of lithologies set in a matrix of similar materials with a preferred orientation of fragments and clasts (Fig. 4).

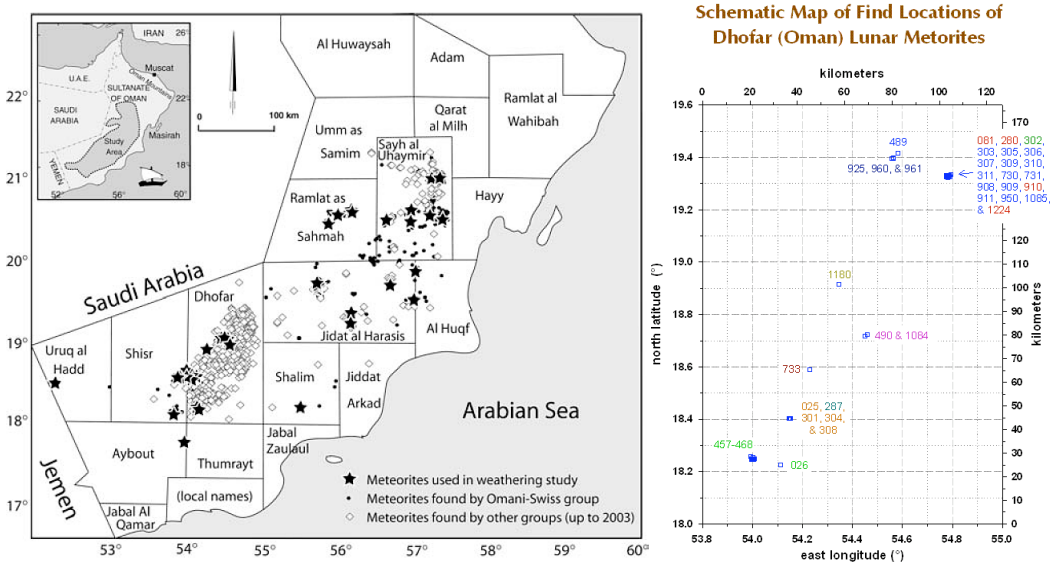

Figure 2 and 3: Location maps of the Dhofar region in Oman (from Al-Kathiri et al., 2005) and the specific coordinates for Dhofar 1180 (near center).

Petrography and mineralogy

Clasts (0.1 to 1 mm) in this meteorite are mostly ferroan anorthosites (Fa_{38}; $Fs_{38.6}Wo_{2.1}$) as well as gabbroic anorthosites, anorthositic gabbros, norites (Fa_{18}), troctolites, olivine gabbros ($Fa_{36.8}$; $Fs_{33.4}Wo_{4.3}$), microporphyritic and fine-grained impact melt breccias, and rare, ophitic/subophitic basalts (pyroxene core - $Fs_{40}Wo_{11.8}$, rim - $Fs_{69.1}Wo_{15.8}$) (Connolly et al., 2006; Bunch et al., 2006; Zhang and Hsu, 2006). The plagioclase feldspar varies in composition from $An_{91\text{-}99}$, and the matrix contains numerous fragments of plagioclase, pyroxene, and olivine (Fig. 4).

Figure 4: Cut slab face of Dhofar 1180 illustrating dark glassy matrix and light colored feldspathic clast. Image from M. Farmer. Width of sample is10 cm.

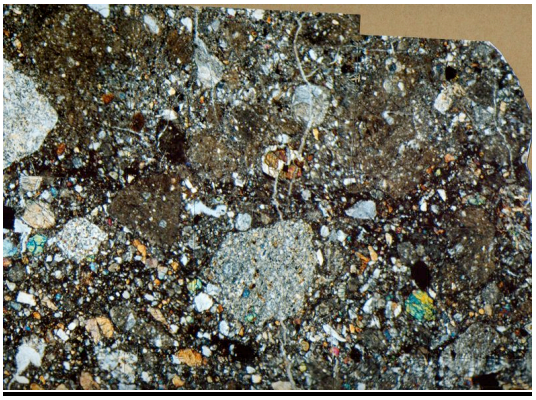

Figure 5: Thin section image of Dhofar 1180. Image from T. Bunch and T. Irving. Field of view is 5 mm.

Chemistry

There is only scarce compositional data available for this meteorite, but it is known to have 22.6 wt% Al_2O_3, 9.3 wt% FeO, and 0.9 ppm Th (Bunch et al., 2006). These traits alone demonstrate that it is a mixed breccia that includes both basaltic and highlands materials, but no KREEP. Additional studies will undoubtedly demonstrate whether it has unique compositional characteristics.

Radiometric age dating

There are no known studies.

Cosmogenic exposure ages

There are no known studies.